

**CSC 180-04, Fundamentals of Computing**  
**Fall 2021**  
*Eastern Connecticut State University*

**Instructor:** Dr. Garrett Dancik  
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Science Building, Rm 257

**Office Hours:** MW: 2-4:00  
F: 2-3:00, or by appointment

**Course information:**

Title: Fundamentals of Computing  
Day/Time: MWF 9:00 – 9:50 AM (Science Rm 138)  
Section: 04  
Credit: 3 hours

**Course Materials:**

1. Course notes and class website: <https://gdancik.github.io>
2. Additional course material: <https://easternct.blackboard.com/>
3. Software (see course website for installation information):
  - a. Anaconda Navigator / Jupyter Notebooks  
(<https://www.anaconda.com/>)
  - b. CircuitVerse (<https://circuitverse.org/>)
4. Piazza (<https://piazza.com>) will be used for online discussion. A mobile app is available from the App store (iPhone/iPad) or Google Play (Android devices)
5. Optional Textbook: *Invitation to Computer Science*, 8th Edition, by G. Schneider and J. Gersting, Cengage Learning, 2019, ISBN 978-1337561914

**Course Description**

This course provides an introduction to the fundamental principles of computing from hardware to software to computational thinking. Students will acquire the foundational knowledge and skills essential to advance their studies in computer science. The focus will be on the big ideas in computing: creativity, abstraction, data and information, algorithms, programming, the internet, and global impact. Students will learn to apply established computational thinking practices.

## Learning Outcomes

Upon completion of the course, student are expected to:

1. Identify impacts of computing
2. Explain how data or information is represented for computational use
3. Explain how logic gates are used through the process of abstraction in computing modeling and organization
4. Describe and compare algorithms for efficiency using Big-O notation
5. Create a computational artifact with a practical intent through programming
6. Select appropriate programming techniques and algorithms to creatively solve problems
7. Collaborate and communicate with another student in solving a computational problem

**Online discussion:** We will use Piazza (<https://piazza.com>) as an online discussion and question and answer forum in this course. Shortly after the beginning of the semester, you will receive an e-mail with registration instructions sent to your Eastern e-mail address. Piazza allows for students to post and answer questions, anonymously if desired. The class benefits by seeing questions asked by other students (who often have the same questions as you) and by contributing answers. As the instructor, I will answer questions and can endorse correct student answers as well. For these reasons, all non-personal (e.g., not grade-related) questions should be posted to Piazza rather than e-mailed to me. Questions regarding homework assignments should be posted to Piazza. Questions about homeworks must be specific and may contain no more than *several* lines of code. Note that posts not meeting these criteria will be deleted and the poster penalized if warranted. Some assignments may require participation using Piazza.

## Grading

Labs / Exercises	40%
Exam I	20%
Exam II	20%
Exam III	20%

**Lab Policy:** We will devote some class time to completion of lab assignments. These assignments will be due at the beginning of the class on the due date unless specified otherwise. ***Late assignments will NOT be accepted unless you have a valid reason*** (e.g., death in the family). Your lowest lab grade will be dropped. If you know ahead of time that you will be missing class or will not be able to complete an assignment on time, please talk to me and if appropriate, additional arrangements will be made.

**Exam Policy:** Make-up exams will only be given if you have a valid reason for missing the due date. If you know ahead of time that you will miss an exam, please talk to me before the exam to make arrangements for taking it. Missing **two** or **more** exams without official excuses will result in your dismissal from the course with a grade of **F**.

## **Grading Scale**

93-100: <b>A</b>	90-92: <b>A-</b>	
87-89: <b>B+</b>	83-86: <b>B</b>	80-82: <b>B-</b>
77-79: <b>C+</b>	73-76: <b>C</b>	70-72: <b>C-</b>
65-69: <b>D+</b>	60-64: <b>D</b>	59 and below: <b>F</b>

## **Academic Honesty**

You are encouraged to discuss projects and exercises with one another unless specified otherwise. However, copying answers from another student (unless otherwise specified) is *cheating* and this will not be tolerated. A student found cheating will automatically receive a grade of “F” on the assignment and will be reported to the department head with further potential consequences. In addition, students are responsible for familiarizing themselves with the University’s numerous policies and procedures contained in the University Catalog and Student Handbook. The Code of Conduct policies and the Policy on Academic Misconduct are of special significance, since cheating, plagiarism, and personal misconduct are strictly prohibited and carry severe penalties. Students should read and understand Eastern's Academic Misconduct Policy, which can be found in the student handbook: [www.easternct.edu/academic-misconduct](http://www.easternct.edu/academic-misconduct). All violations will be handled under the procedures established in this policy.

## **Classroom civility and safety**

In general, follow the Golden Rule and treat others with respect and the way you want to be treated. In addition, students are expected to adhere to current health and safety protocols as regularly updated on Easternct.edu. Any student who fails to follow safety protocols during class will be referred to the Office of Student Conduct for disciplinary review. In response to state or university restrictions, the professor may deem it necessary to revise assignments and due dates articulated here.

## **Special Accommodations**

Eastern Connecticut State University is committed to following the requirements of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you are a student with a disability (or think you may have a disability), and require adaptations or accommodations, or assistance evacuating a building in the case of an emergency, please contact the Office of AccessAbility Services (OAS) at 860-465-0189 to discuss your request further. Any student registered with the OAS should contact the instructor as soon as possible for assistance with classroom accommodations. Please note that accommodations are not retroactive, and must be communicated through a Letter of Accommodation which is drafted by the OAS.

**\*Tentative course schedule**

<b>Week</b>	<b>Week of</b>	<b>TOPICS</b>	
1	8/23/21	Introduction to Computer Science, Algorithms, and Programming	
2	8/30/21	Problem Solving with Programming - Variables, I/O, and expressions	
3	9/6/21	<i>Labor Day – No Class Monday</i>	Problem Solving with Programming - Intro to Control Statements (if..else..)
4	9/13/21	Problem Solving with Programming - More Control Statements (loops)	
5	9/20/21	<b>Review / Exam I</b>	
6	9/27/21	Machine Representation of Data (Bits, Bytes, Binary, Octal, Hexadecimal, 1's and 2's complements)	
7	10/4/21	Boolean Logic and gates (AND, OR, NOT)	
8	10/11/21	Combinational Logic - Adders	
9	10/18/21	Combinational Logic - Decoder and Multiplexer	
10	10/25/21	Sequential Logic and Flip-Flops	
11	11/1/21	Basic computer organization (Von Newman Architecture)	<b>Review / Exam II</b>
12	11/8/21	Algorithms and complexity (Big-O Notation)	
13	11/15/21	The Science of Algorithms (Linear and Binary Search)	
14	11/22/21	The Science of Algorithms (Sorting Algorithms)	<i>Thanksgiving Recess – No Class Friday</i>
15	11/29/21	Ethics in Computer Science	
16	12/6/21	Wrap-up and Review	
	12/10/21	<b>Exam III (8 – 10:00 AM)</b>	

**\*This is a tentative schedule and is subject to change**